



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,173	03/07/2005	Peter Francis Garcia	CL2173USPCT	9276

7590 11/29/2007
Barbara C Siegel
E I du Pont de Nemours and Company
Legal Patents
Wilmington, DE 19805

EXAMINER

ESTRADA, MICHELLE

ART UNIT	PAPER NUMBER
----------	--------------

2823

MAIL DATE	DELIVERY MODE
-----------	---------------

11/29/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/527,173	Applicant(s) CARCIA ET AL.	
	Examiner Michelle Estrada	Art Unit 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/10/07.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claims 1-13 are objected to because of the following informalities: The term "effective" in claim 1 is a relative term which renders the claim indefinite. The term "effective" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. If Applicant intends any particular partial pressure of oxygen, it must be clearly recited.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Konakahara et al. (2002/0037249).

Re claim 1, Konakahara et al. disclose a process for depositing undoped transparent oxide semiconductor of zinc oxide, in a field effect transistor, comprising a method of: a) chemical vapor deposition of undoped TOS in an effective partial pressure of oxygen (Page 1, [0008], [0012], [0074]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Giancaterina et al. (Non-patent literature supplied in the IDS filed 5/31/05) in view of Kim (6,580,473).

Re claim 1, Giancaterina et al. disclose a process for depositing undoped transparent oxide semiconductor of zinc oxide, comprising a method of: a) physical vapor deposition of undoped TOS in an effective partial pressure of oxygen mixed with an inert gas (Abstract and page 2, 2nd paragraph).

Giancaterina et al. do not disclose depositing the layer in a field effect transistor. Kim discloses depositing a transparent oxide on a field effect transistor (Col. 6, lines 30-40).

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Giancaterina et al. and Kim to enable the deposition step of Giancaterina et al. to be performed according to the teachings of Kim because one of ordinary skill in the art would have been motivated to look to alternative suitable methods of performing the disclosed deposition step of Giancaterina et al. and art recognized suitability for an intended purpose has been recognized to be motivation to combine. See MPEP 2144.07.

Re claim 2, Giancaterina et al. disclose wherein the physical vapor deposition is rf magnetron sputtering (abstract).

Re claim 7, Giancaterina et al. disclose wherein deposition is by physical vapor deposition and wherein the inert gas is argon (abstract).

Claims 3-6, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giancaterina et al. as applied to claims 1, 2 and 7 above, and further in view of the following comments.

Giancaterina et al. does not specifically disclose the PVD processes of claims 3-6. However, the Examiner takes official notice that all these PVD processes (dc magnetron sputtering, diode sputtering, triode sputtering and ion beam sputtering) are well known in the art at the time of Applicant's invention. Therefore, it would have been within the scope of one of ordinary skill in the art to use any of these processes to deposit an undoped TOS layer.

Re claims 12 and 13, One of ordinary skill in the art would have been led to the recited partial pressure of oxygen through routine experimentation to achieve a desired deposition, structure and characteristics of the TOS layer.

In addition, the selection of partial pressure of oxygen, its obvious because it is a matter of determining optimum process conditions by routine experimentation with a limited number of species of result effective variables. These claims are prima facie obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. In re Woodruff, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also In re Huang, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996)(claimed ranges or a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also In re Boesch, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill or art) and In re Aller, 105 USPQ 233 (CCPA 1995) (selection of optimum ranges within prior art general conditions is obvious).

Note that the specification contains no disclosure of either the critical nature of the claimed partial pressure of oxygen or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen partial pressure of oxygen or upon another variable recited in a claim, the Applicant must show that the chosen partial pressure of oxygen are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konakahara et al. as applied to claim 1 above, and further in view of the following comments.

Konakahara et al. does not specifically disclose the CVD processes of claims 8-11. However, the Examiner takes official notice that all these CVD processes (low pressure CVD, plasma-enhanced CVD, laser enhanced CVD and atomic layer CVD) are well known in the art at the time of Applicant's invention. Therefore, it would have been within the scope of one of ordinary skill in the art to use any of these processes to deposit an undoped TOS layer.

Response to Arguments

Applicant's arguments filed 9/10/07 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., oxygen partial pressure $0.1P_c < PO_2 < 10P_c$) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies

(i.e., sputtering conditions favorable for achieving low metal oxide film stress) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The claim has more method than sputtering.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Estrada whose telephone number is 571-272-1858. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2800.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

Application/Control Number:
10/527,173
Art Unit: 2823

Page 8

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Michelle Estrada". The signature is fluid and cursive, with the first name "Michelle" written in a larger, more prominent script than the last name "Estrada".

Michelle Estrada
Primary Examiner
Art Unit 2823

ME
November 26, 2007